

Amendments to the Specification

Please amend and replace published paragraph [0018] of the specification as follows:

[0018] Fig. 3 is a view of a single LED and associated lens in an array with a spherical lens having a compound shape. Fig. 3A is a view of a single LED and the offset spherical lens having a compound shape.

Please amend and replace published paragraph [0023] as follows:

[0023] More specifically, FIG. 3 shows an LED 30 mounted on a circuit board 32 with an associated lens 34 from an array that may comprise, for example, one thousand (1,000) LED's. Each LED 30 typically emits disparate light from the sides 38 so that the light is widely dispersed. In order to more effectively collect the light, lens 34 is formed of a compound shape that includes a curved surfaces 40 separated by a flat surface 42. Curved surfaces 40 may have a spherical or offset aspheric shape 41, as shown in Fig. 3A, although in FIG. 3 a spherical surface is shown. Lens 34 is centered about center line CL extending through LED 30 so that light from each side 38 of LED 30 is projected into the respective curved surface 40 on that side. Each curved surface 40 is centered about a radius R extending from a center point 44. Each radius R extends from center point 44 that lies directly above an imaginary light point source on each side of the LED 30. The location of center point 44 and length of radius R are determined by standard rules for finding a radius of curvature and center point distance for a plano-convex lens. Even though light is emitted along the sides 38 of LED, center point 44 is determined by assuming a point source of light at each side of LED 30. Thus, each side 38 of LED 30 emits light that primarily transmits through what is effectively a plano-convex lens centered over that side 38. The geometry of each spherical surface 40 is optimized for each portion of the LED 30 from which it collects light. In other words, the dimensions of the lens 34 is determined by finding the preferred plano-convex shape for collimating light on one side of the LED (assuming a point source of light) by standard rules known to those skilled in the art. However, each plano-

convex shape (curved surface 40) is incorporated into a single lens separated by flat surface 42. This configuration effectively provides half of a lens on one side of the LED 30 and another half of a lens on another side of the LED 30. FIG 3A is similar to FIG 3 except that the spherical or aspheric shape has been offset 41 relative to the centerline of the LED axis.